Wetland Resources, Inc.

Delineation / Mitigation / Restoration / Habitat Creation / Permit Assistance

9505 19th Avenue S.E.
Suite 106
Everett, Washington 98208
(425) 337-3174
Fax (425) 337-3045

CRITICAL AREA STUDY

FOR

Scrivanich-116th Street

Wetland Resources, Inc. Project #13185

Prepared By:

Wetland Resources, Inc.
9505 19th Ave SE, Suite 106
Everett, WA 98208
(425) 337-3174

For:

Larry Scrivanich
P.O. Box 2174
Woodinville, WA 98072

September 12, 2013

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APPENDICES

PROPERTY LOCATION AND SITE DESCRIPTION

Wetland Resources, Inc. (WRI) performed a site investigation on August 26, 2013 to locate jurisdictional wetlands and streams on and in proximity to King County parcel numbers 3226059114, -113, -135, and -078. The subject property is located along NE 116th Street in the City of Kirkland, Washington. The Public Land Survey System (PLSS) locator for the subject property is Section 32, Township 26N, Range 05E, W.M. The study site is situated within the Cedar/Sammamish Watershed, or Water Resources Inventory Area (WRIA) 8, as well as the City of Kirkland Forbes Creek Drainage Basin.

The 3.46-acre subject property is comprised of four separate parcels, three of which are developed. Parcel numbers 3226059114 and -078 each contain a single-family home while parcel number -113 contains a small garage/accessory structure near the northern property boundary (the majority of the parcel is undeveloped). Parcel 3226059135 is undeveloped yet appears to be used by parcel number -078. The subject property is located in a residential setting that also contains some commercial use. Housing subdivisions border the subject property on the east and west while single-family parcels are located to the south. The northern property boundary is bordered by NE 116th Street. Interstate 405 (I-405) is approximately 2,000 feet to the east, the Totem Lake neighborhood is approximately 2,800 feet to the north and northeast, and downtown Kirkland is located approximately 2 miles to the southwest.

Vegetation on the study site is comprised of upland forested and scrub-shrub species, wetland species, landscaped areas, and maintained lawn. A large landscaped area is located on parcel 3226059113, immediately south of parcel -114. A relatively dense forested area containing native species sits to the south of the landscaped area and encompasses the remainder of the parcel. Parcel 3226059135 is dominated by native conifers and low-growing herbaceous vegetation. The northernmost portion of the study site slopes down gently to the south-southeast while the slope gradually steepens on the center portion of the site. The southern portion then slopes down gently again to the south-southeast.

One wetland and one seasonal stream were identified on the subject property during the August 26 site investigation.

REVIEW OF EXISTING INFORMATION

Prior to conducting the site investigation, public resources were reviewed to gather background information on the subject property and the surrounding area. The following information was examined:

- USFWS National Wetlands Inventory: The National Wetland Inventory (NWI) does not indicate any wetland areas on the subject property.
- USDA/NRCS Web Soil Survey: The soil mapped within the project area includes Alderwood gravelly sandy loam, 6 to 15 percent slopes, and Everett gravelly sandy loam, 5 to 15 percent slopes. Neither soil is classified as hydric by the Natural Resources Conservation Service.
- WDFW SalmonScape Interactive Mapping System: The SalmonScape interactive map does not show the presence of any streams on or near the subject property.

- WDFW Priority Habitat and Species (PHS) Interactive Map: There are no priority habitats or listed species on the subject property per the PHS Interactive Map. The nearest PHS area is a wetland located approximately 1,000 feet to the north and northeast.
- King County iMap Interactive Mapping Tool: The King County iMap does not show any wetlands or streams on the subject property.
- City of Kirkland Sensitive Areas Map: The Kirkland Sensitive Areas Map illustrates an off-site wetland bordering the subject property to the south.

METHODOLOGY

Wetland boundaries were determined using the routine determination approach described in the Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory 1987), or Corps Manual, and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountians, Valleys, and Coast Region (Version 2.0) (U.S. Army Corps of Engineers 2010), or the Regional Supplement. Use of these manuals is required by the City of Kirkland and the Washington Administrative Code (WAC) for performing wetland delineations. Under the routine methodology, the process for making a wetland determination is based on three steps:

1.) Examination of the site for hydrophytic vegetation (species present and percent cover);

2.) Examination of the site for hydric soils;

3.) Determining the presence of wetland hydrology

The following criteria must be met in order to make a positive wetland determination:

Vegetation Criteria

The Corps Manual and 2010 Regional Supplement defines hydrophytic vegetation as "*the assemblage of macrophytes that occurs in areas where inundation or soil saturation is either permanent or of sufficient frequency and duration to influence plant occurrence.*" Field indicators are used to determine whether the hydrophytic vegetation criteria have been met. Examples of these indicators include, but are not limited to, the rapid test for hydrophytic vegetation, a dominance test result of greater than 50%, and/or a prevalence index score less than or equal to 3.0.

Soils Criteria

The 2010 Regional Supplement (per the National Technical Committee for Hydric Soils) defines hydric soils as soils *"that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part."* Field indicators are used to determine whether a given soil meets the definition for hydric soils. Indicators are numerous and include, but are not limited to, presence of a histosol or histic epipedon, a sandy gleyed matrix, depleted matrix, and redoximorphic depressions.

Hydrology Criteria

Wetland hydrology encompasses all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface for a sufficient duration during the growing

season. Areas with evident characteristics of wetland hydrology are those where the presence of water has an overriding influence on the characteristics of vegetation and soils due to anaerobic and chemically reducing conditions, respectively. The strongest indicators include the presence of surface water, a high water table, and soil saturation within at least 12 inches of the soil surface.

BOUNDARY DETERMINATION FINDINGS/RESULTS

Wetlands identified on the subject property were rated pursuant to the City of Kirkland's Wetland Field Data Form as required by the Kirkland Zoning Code (KZC), section 90.40(3)(h). Wetlands were classified according to the U.S. Fish and Wildlife Service (USFWS) Classifications of Wetlands and Deepwater Habitats of the United States (Cowardin et al., 1979), also known as the Cowardin Classification System, as well as the Hydrogeomorphic (HGM) Classification System (Brinson 1993).

The ordinary high water marks (OHWM) of streams and were identified using the methodology described in the Washington State Department of Ecology document *Determining the Ordinary High Water Mark on Streams in Washington State (Second Review Draft)* (Olson and Stockdale 2010). Streams were classified according to KZC 90.30(4) through (6) and 90.90.

One wetland, referred to as Wetland A for the purposes of this report, and one stream (Stream A) were identified on the subject property. These resources are described below.

Wetland A

Wetland A is a slope wetland per the HGM classification system and is located in the southeast corner of the subject property. It extends off-site to the east and south. Based on the Cowardin classification system, Wetland A is a palustrine/forested/broad-leaved deciduous/seasonally flooded & saturated wetland system.

Wetland A received an overall score of 17 points on the City of Kirkland Wetland Field Data Form. This equates to a Type 3 wetland rating. Per KZC 90.45, the buffer for a Type 3 wetland located in a primary drainage basin is 50 feet (the Forbes Creek Drainage Basin is considered a primary basin per the City of Kirkland Sensitive Areas Map).

The primary source of hydrology for Wetland A is groundwater with additional influence from Stream A. Wetland A is located in a geomorphic position that is capable of collecting excess water from precipitation, runoff, groundwater, etc. In addition, a dry-season water table was observed at a depth of 14" below the soil surface. These characteristics meet wetland hydrology indicators C2 and D2 on the 2010 Regional Supplement Wetland Delineation Data Form.

Vegetation within Wetland A is comprised primarily of deciduous forested and scrub-shrub species. Dominant species observed at sampling point S-1 include red alder (*Alnus rubra*), black cottonwood (*Populus balsamifera*), salmonberry (*Rubus spectabilis*), lady fern (*Athyrium filix-femina*), and giant horsetail (*Equisetum telmateia*), among others. Greater than 50% of the dominant species within Wetland A have an indicator status of facultative (FAC) or wetter, which meets the hydrophytic vegetation criteria per the Corps Manual and the 2010 Regional Supplement.

Soils within Wetland A are black clay loam to a depth of 11 inches, dark grayish brown between 11 and 18 inches in depth, and pale brown between 18 and 20 inches in depth. Redoximorphic features (concentrations) were observed in the soil matrix in each layer. A redox dark surface is present in the soils of Wetland A, which meets hydric soil indicator F6 on the 2010 Regional Supplement Wetland Delineation Data Form.

No nesting, denning, or breeding areas were observed in Wetland A or the surrounding area during the site investigation. The wetland and surrounding buffer is most likely utilized by various songbirds, small mammals, common amphibians and reptiles, and species suited to life in urban/suburban settings.

Stream A

Stream A is an intermittent/seasonal stream located in the southeast corner of the subject property. It originates off-site to the east, flows in a southwesterly direction through Wetland A, and continues off-site to the south. The stream was not flowing at the time of the site inspection, yet areas of shallow standing water and saturated soils/substrate were present.

The eastern, off-site portion of the stream is linear and narrow and may be a historical, man-made feature created to help with drainage. The off-site portion of the stream is actually comprised of two separate channels. These channels converge at the eastern property boundary and become one feature on the subject property and off-site to the south. The on-site portion of the stream is very short, yet wider than the eastern and southern off-site portions. The stream substrate is primarily comprised of mud, but an area of herbaceous vegetation (creeping buttercup (*Ranunculus repens*), and water parsley (*Oenanthe sarmentosa*)) is also present.

Stream A is a seasonal feature that lacks fish habitat and is not used by salmonids. Based on these characteristics, Stream A meets the criteria for a Class C stream per KZC 90.30(6). Class C streams located in primary basins within the City of Kirkland require a 35-foot buffer.

USE OF THIS REPORT

This Critical Area Study is supplied to Larry Scrivanich as a means of determining on-site critical area conditions, as required by the City of Kirkland. This report is based largely on readily observable conditions and, to a lesser extent, on readily ascertainable conditions. No attempt has been made to determine hidden or concealed conditions.

The laws applicable to critical areas are subject to varying interpretations and may be changed at any time by the courts or legislative bodies. This report is intended to provide information deemed relevant in the applicant's attempt to comply with the laws now in effect.

This delineation and report conforms to the standard of care employed by wetland ecologists. No other representation or warranty is made concerning the work or this report and any implied representation or warranty is disclaimed.

Wetland Resources, Inc.

Jim Rothwell
Senior Ecologist, PWS

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Appendix A

Wetland Rating Forms

Plate 26
WETLAND FIELD DATA FORM

(Note: Applicable to Chapter 90 KZC, but not Chapter 83 KZC)

WETLAND FIELD DATA FORM

BEGIN BY CHECKING ANY OF THE FOLLOWING (a. – e.) THAT APPLY:

a. The wetland is contiguous to Lake Washington;

b. The wetland contains at least 1/4 acre of organic soils, such as peat bogs or mucky soils;

c. The wetland is equal to or greater than 10 acres in size and having three or more wetland classes, as defined by the U.S. Fish & Wildlife Service (Cowardin et al., 1979), one of which is open water;

d. The wetland has significant habitat value to state or federally listed threatened or endangered wildlife species; or

e. The wetland contains state or federally listed threatened or endangered plant species.

IF ANY OF THE CRITERIA LISTED ABOVE ARE MET, THEN THE WETLAND IS CONSIDERED TO BE TYPE 1. IF THAT IS THE CASE, PLEASE CONTINUE TO COMPLETE THE ENTIRE FORM, BUT DO NOT ASSIGN POINTS.

IF THE WETLAND DOES NOT MEET THE CRITERIA LISTED ABOVE FOR TYPE 1, COMPLETE THE ENTIRE FORM, USING THE ASSIGNED POINTS TO DETERMINE IF IT IS A TYPE 2 OR TYPE 3 WETLAND.

Type 2 wetlands typically have at least two wetland vegetation classes, are at least partially surrounded by buffers of native vegetation, connected by surface water flow (perennial or intermittent) to other wetlands or streams, and contain or are associated with forested habitat.

1. Total wetland area

Estimate wetland area and score from choices	Acres		Point Value	Points
	>20.00	=	6	
	10-19.99	=	5	
	5-9.99	=	4	
	1-4.99	=	3	
	0.1-0.99	=	**2**	**2**
	<0.1	=	1	

2. Wetland classes: Determine the number of wetland classes that qualify, and score according to the table.

	# of Classes		Points
Open Water: if the area of open water is >1/3 acre or >10% of the total wetland area	**1**	=	**1**
Aquatic Beds: if the area of aquatic beds is >10% of the **open water** area **or**>1/2 acre	2	=	3
Emergent: if the area of emergent class is >1/2 acre **or** >10% of the total wetland area	3	=	5
Scrub-Shrub: if the area of scrub-shrub class is >1/2 acre **or** >10% of the total wetland area	4	=	7
Forested: if the area of forested class is >1/2 acre or >10% of the total wetland area	5	=	10

3. Plant species diversity.

For all wetland classes which qualified in 2 above, count the number of different plant species and score according to the table below. You do not have to name them.

e.g., if a wetland has an aquatic bed class with 3 species, and emergent class with 4 species and a scrub-shrub class with 2 species, you would circle 2, 2, and 1 in the second column (below).

Class	# of Species		Point Value	Class	# of Species		Point Value
Aquatic Bed	1-2	=	1	Scrub-Shrub	1-2	=	1
	3	=	2		3-4	=	2
	>3	=	3		>4	=	3
Emergent	1-2	=	1	Forested	**1-2**	**=**	**1**
	3-4	=	2		3-4	=	2
	>4	=	3		>4	=	3

4. Structural diversity.

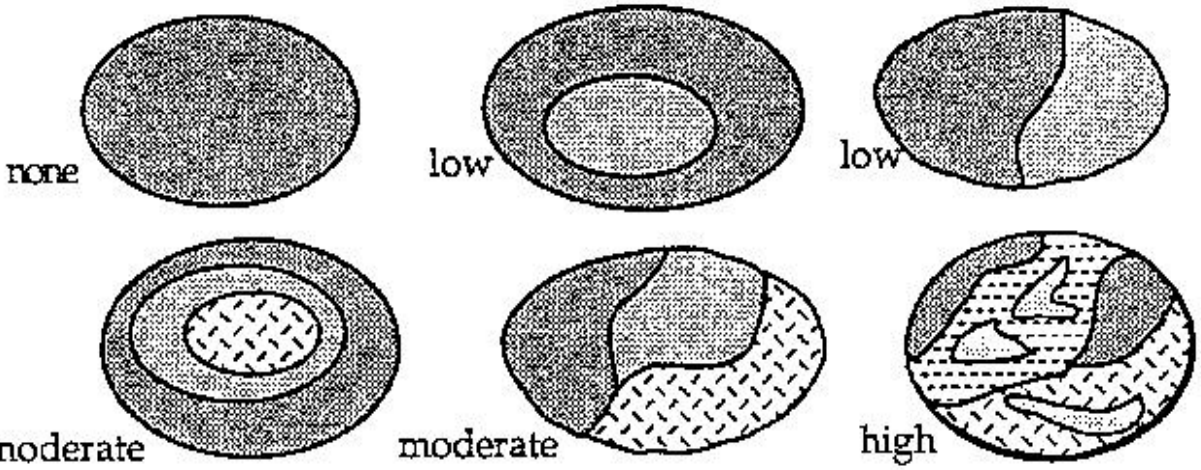
If the wetland has a forested class, add 1 point for each of the following attributes present:

Trees >50′ tall	=	**1**
Trees 20′ to 49′ tall	=	**1**
Shrubs	=	**1**
Herbaceous ground cover	=	**1**

5. Interspersion between wetland classes.

Decide from the diagrams below whether interspersion between wetland classes is high, moderate, low or none

3	=	High
2	=	Moderate
1	**=**	**Low**
0	=	None



6. Habitat features

Add points associated with each habitat feature listed:	=	3
Is there evidence of current use by beavers?	=	2
Is a heron rookery located within 300′?	=	1
Are raptor nest(s) located within 300′?	=	1
Are there at least 2 standing dead trees (snags) per acre?2	=	**1**
Are there any other perches (wires, poles, or posts)?	=	1
Are there at least 3 downed logs per acre?	=	**1**

7. Connection to streams

Is the wetland connected at any time of the year via surface water? (score one answer only)

To a perennial stream or a seasonal stream *with* fish	=	5
To a seasonal stream *without* fish	=	**3**
Is not connected to any stream	=	0

8. Buffers

Step 1: Estimate (to the nearest 5%) the percentage of each buffer or land-use type (below) that adjoins the wetland boundary. Then multiply these percentages by the factor(s) below and enter result in the column to the right.

	% of Buffer	Step 1	Width Factor	Step 2
Roads, buildings or parking lots	20% X 0 =	0	=	0
Lawn, grazed pasture, vineyards or annual crops	35% X 1 =	35	=	70
Ungrazed grassland or orchards	% X 2 =		=	
Open water or native grasslands	% X 3 =		=	
Forest or shrub	45% X 4 =	180	=	360
			Add buffer total:	**430**

Step 2: Multiply result(s) of step 1:
By 1 if buffer width is 25-50′
By 2 if buffer width is 50-100′
By 3 if buffer width is >100′

Enter results and add sub-scores

Step 3: Score points according to the following table:

Buffer Total
900-1200 = 4
600-899 = 3
300-599 = **2**
100-299 = 1

9. Connection to other habitat areas:

Is there a riparian corridor to other wetlands within 0.25 of a mile, or a corridor >100′ wide with good forest or shrub cover to any other habitat area?	=	5
Is there a narrow corridor <100′ wide with good cover or a wide corridor >100′ wide with low cover to any other habitat area?	=	3
Is there a narrow corridor <100′ wide with low cover or a significant habitat area within 0.25 mile but no corridor?	=	**1**
Is the wetland and buffer completely isolated by development and/or cultivated agricultural land?	=	0

10. Scoring

Add the scores to get a total: **17**

Question: Is the total greater than or equal to 22 points?

Answer:

Yes = Type 2 **No = Type 3**

Appendix B

Delineation Data Forms

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Scrivanich-116th Street City/County: Kirkland/King Sampling Date: 8/26/13

Applicant/Owner: Larry Scrivanich State: WA Sampling Point: S-1

Investigator(s): JR Section, Township, Range: S32, T26N, R05E

Landform (hillslope, terrace, etc.): Flat area Local relief (concave, convex, none): _____ Slope (%): NA

Subregion (LRR): LRR-A Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Everett gravelly sandy loam, 5 to 15 percent slopes NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☑ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ☑ No ☐ Hydric Soil Present? Yes ☑ No ☐ Wetland Hydrology Present? Yes ☑ No ☐	**Is the Sampled Area within a Wetland?** Yes ☑ No ☐

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Alnus rubra	45%	Yes	FAC
2. Populus balsamifera	20%	Yes	FAC
3.			
4.			
	65%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30')			
1. Rubus spectabilis	50%	Yes	FAC
2. Rubus armeniacus	15%	Yes	FACU
3.			
4.			
5.			
	65%	= Total Cover	
Herb Stratum (Plot size: 10')			
1. Athyrium filix-femina	10%	Yes	FAC
2. Polystichum munitum	5%	Yes	FACU
3. Equisetum telmatiea	5%	Yes	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	20%	= Total Cover	
Woody Vine Stratum (Plot size: 10')			
1. Rubus ursinus	20%	Yes	FACU
2.			
	20%	= Total Cover	

% Bare Ground in Herb Stratum 80%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 62.5% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	0 (A)		0 (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☑ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:

SOIL

Sampling Point: S-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-11	10YR 2/1	98%	7.5YR 2.5/2	2%	C	M	Clay Loam	
11-18	10YR 4/2	97%	7.5 YR 3/4	1%	C	PL	Sandy Loam	
			10 YR 4/4	2%	C	M		
18-20	10YR 6/3	93%	10YR 5/6	7%	C	M	Silty Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☑ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:_____

Depth (inches):_____

Hydric Soil Present? Yes ☑ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (**LRR A**)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ☐ Drainage Patterns (B10)
- ☑ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ☐ No ☑ Depth (inches): _____

Water Table Present? Yes ☑ No ☐ Depth (inches): 14 inches

Saturation Present? (includes capillary fringe) Yes ☐ No ☑ Depth (inches): _____

Wetland Hydrology Present? Yes ☑ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Scrivanich-116th Street City/County: Kirkland/King Sampling Date: 8/26/13

Applicant/Owner: Larry Scrivanich State: WA Sampling Point: S-2

Investigator(s): JR Section, Township, Range: S32, T26N, R05E

Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): _____ Slope (%): <1%

Subregion (LRR): LRR-A Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Alderwood gravelly sandy loam, 6 to 15 percent slopes NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☑ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ☑ No ☐ Hydric Soil Present? Yes ☐ No ☑ Wetland Hydrology Present? Yes ☐ No ☑	**Is the Sampled Area within a Wetland?** Yes ☐ No ☑

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Alnus rubra	30%	Yes	FAC
2. Populus balsamifera	15%	Yes	FAC
3. Frangula purshiana	5%	No	FAC
4. Prunus Emarginata	5%	No	FACU
	55%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30')			
1. Rubus spectabilis	60%	Yes	FAC
2. Rubus armeniacus	20%	Yes	FACU
3. Crataegus sp.	10%	No	FAC
4.			
5.			
	90%	= Total Cover	
Herb Stratum (Plot size: 10')			
1. Polystichum munitum	5%	Yes	FACU
2. Athyrium filix-femina	5%	Yes	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	10%	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum 90%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 67% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	0 (A)		0 (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☑ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:

SOIL

Sampling Point: S-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-9	10YR 2/1						Sa. Cl. Loam	
9-16	2.5YR 5/3		10YR 4/6	3%	C	M	Sa. Cl. Loam	
16-20	10YR 6/2		7.5 YR 4/6	7%	C	M	Clay	Possible restrictive layer.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Clay

Depth (inches): Starting at 16"

Hydric Soil Present? Yes ☐ **No** ☑

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (**LRR A**)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ☐ Drainage Patterns (B10)
- ☑ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ☐ No ☐ Depth (inches): _____

Water Table Present? Yes ☑ No ☐ Depth (inches): 13 inches

Saturation Present? (includes capillary fringe) Yes ☐ No ☐ Depth (inches): _____

Wetland Hydrology Present? Yes ☐ **No** ☑

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Scrivanich-116th Street City/County: Kirkland/King Sampling Date: 8/26/13

Applicant/Owner: Larry Scrivanich State: WA Sampling Point: S-3

Investigator(s): JR Section, Township, Range: S32, T26N, R05E

Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): _____ Slope (%): 1%

Subregion (LRR): LRR-A Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Alderwood gravelly sandy loam, 6 to 15 percent slopes NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☑ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ☐ No ☑ Hydric Soil Present? Yes ☐ No ☑ Wetland Hydrology Present? Yes ☐ No ☑	**Is the Sampled Area within a Wetland?** Yes ☐ No ☑

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Prunus Emarginata	15%	Yes	FACU
2. Populus balsamifera	15%	Yes	FAC
3. Pseudotsuga menzesii	10%	Yes	FACU
4.			
	40%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30')			
1. Corylus cornuta	20%	Yes	FACU
2. Oemleria cerasiformus	10%	No	FACU
3. Rubus armeniacus	20%	Yes	FACU
4. Lonicera involucrata	10%	No	FAC
5.			
	60%	= Total Cover	
Herb Stratum (Plot size: 10')			
1. Polystichum munitum	10%	Yes	FACU
2. Athyrium filix-femina	2%	No	FAC
3. Geranium robertianum	15%	Yes	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	27%	= Total Cover	
Woody Vine Stratum (Plot size: 10')			
1. Rubus ursinus	5%	Yes	FACU
2.			
		= Total Cover	

% Bare Ground in Herb Stratum 73%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 12.5% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	27%	x 3 =	81
FACU species	105%	x 4 =	420
UPL species	0	x 5 =	0
Column Totals:	132 (A)		501 (B)

Prevalence Index = B/A = 3.80

Hydrophytic Vegetation Indicators:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☐ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☐ No ☑

Remarks:

SOIL

Sampling Point: S-3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 2/2	100%					Sa. Cl. Loam	
7-18	7.5YR 3/4	97%	7.5YR 4/6	3%	C	M	Sa. Cl. Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:_____

Depth (inches):_____

Hydric Soil Present? Yes ☐ No ☑

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (**LRR A**)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ☐ No ☑ Depth (inches): _____

Water Table Present? Yes ☐ No ☑ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☐ No ☑ Depth (inches): _____

Wetland Hydrology Present? Yes ☐ No ☑

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Scrivanich-116th Street City/County: Kirkland/King Sampling Date: 8/26/13

Applicant/Owner: Larry Scrivanich State: WA Sampling Point: S-4

Investigator(s): JR Section, Township, Range: S32, T26N, R05E

Landform (hillslope, terrace, etc.): Flat area Local relief (concave, convex, none): _____ Slope (%): NA

Subregion (LRR): A Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Alderwood gravelly sandy loam, 6 to 15 percent slopes NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☑ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐ No ☑	**Is the Sampled Area within a Wetland?** Yes ☐ No ☑
Hydric Soil Present?	Yes ☐ No ☑	
Wetland Hydrology Present?	Yes ☐ No ☑	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Pseudotsuga menzesii	75%	Yes	FACU
2.			
3.			
4.			
	75%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30')			
1. Mahonia nervosa	10%	Yes	FACU
2. Acer circinatum	5%	Yes	FAC
3.			
4.			
5.			
	15%	= Total Cover	
Herb Stratum (Plot size: 10')			
1. Geranium robertianum	80%	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	80%	= Total Cover	
Woody Vine Stratum (Plot size: 10')			
1. Rubus ursinus	5%	Yes	FACU
2.			
	5%	= Total Cover	

% Bare Ground in Herb Stratum 20%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 20% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	5%	x 3 =	15
FACU species	170%	x 4 =	680
UPL species	0	x 5 =	0
Column Totals:	175 (A)		695 (B)

Prevalence Index = B/A = 3.97

Hydrophytic Vegetation Indicators:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☐ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☐ No ☑

Remarks:

SOIL

Sampling Point: S-4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 3/2	100%					Loam	
5-17	2.5Y 4/3	99%	10YR 3/6	1%	C	M	Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:_____

Depth (inches):_____

Hydric Soil Present? Yes ☐ No ☑

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (**LRR A**)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ☐ No ☑ Depth (inches): _____

Water Table Present? Yes ☐ No ☑ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☐ No ☑ Depth (inches): _____

Wetland Hydrology Present? Yes ☐ No ☑

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Appendix C

Site Photos

Wetland A and Stream A, looking southwest

Landscaped area on parcel number 3226059113

Undeveloped parcel (3226059135) with upland vegetation

Appendix D

Approximate Wetland Boundary Map

APPROXIMATE WETLAND FLAG/BOUNDARY MAP
SCRIVANICH - 116TH STREET

PORTION OF SECTION 32, TOWNSHIP 26N, RANGE 05E, W.M.

PLEASE NOTE: THIS MAP IS FOR PLANNING, DISCUSSION, AND FUTURE SURVEY PURPOSES ONLY. IT DOES NOT REPRESENT A PROFESSIONAL SURVEY. WETLAND FLAGGING IS PINK AND LABELED "WETLAND DELINEATION." FLAGS ARE NUMBERED WRA-1 TO WRA-12. STREAM OHWM FLAGS ARE PINK AND NUMBERED OHW-1 THROUGH OHW-5, OHE-1 THROUGH OHE-2, AND OHEE-1 THROUGH OHEE-4.

SCALE: 1" = 100'

0 50 100 150 200

LEGEND

- WETLANDS
- STREAMS
- DATA POINTS
- PROP. BNDRY

Wetland Resources, Inc.
Delineation / Mitigation / Restoration / Habitat Creation / Permit Assistance
9505 19th Avenue S.E. Suite 106 Everett,Washington 98208
Phone: (425) 337-3174
Fax: (425) 337-3045
Email: mailbox@wetlandresources.com

WETLAND FLAG/BOUNDARY LOCATION MAP
SCRIVANICH-116TH STREET

Larry Scrivanich
P.O. Box 2174
Woodinville, WA 98072

Sheet 1/1
WRI Job #13185
Drawn by: JR
Date: 9/3/13